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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,473	02/05/2004	George Bokisa	TASKPI03US	4978
23623	7590	06/15/2006	EXAMINER	
AMIN & TUROCY, LLP 1900 EAST 9TH STREET, NATIONAL CITY CENTER 24TH FLOOR, CLEVELAND, OH 44114			WONG, EDNA	
		ART UNIT	PAPER NUMBER	
			1753	

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/772,473	BOKISA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Edna Wong	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 24 April 2006.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-13, 15, 23 and 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-13, 15, 23 and 24 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

This is in response to the Amendment dated April 24, 2006. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Response to Arguments***

**Claim Rejections - 35 USC § 103**

Claims **16-22 and 25** have been rejected under 35 U.S.C. 103(a) as being unpatentable over JP 63-239848 ('848) in combination with JP 10-245693 ('693).

The rejection of claims 16-22 and 25 under 35 U.S.C. 103(a) as being unpatentable over JP 63-239848 ('848) in combination with JP 10-245693 ('693) has been withdrawn in view of Applicants' amendment. Claims 16-22 and 25 have been cancelled.

**Allowable Subject Matter**

The indicated allowability of claims 1-13, 15 and 23-24 is withdrawn in view of the new grounds of rejection. Rejections based on the new grounds follow.

***Response to Amendment***

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

I. **Claims 1-8 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 63-239848 ('848) in combination with JP 10-245693 ('693) and Passal (US Patent No. 3,697,391).**

JP '848 teaches a method of electroplating an alloy comprising nickel, cobalt and boron comprising:

(a) providing an electroplating bath comprising:

- (i) an anode;
- (ii) a cathode;
- (iii) water (= aqueous);
- (iv) ionic nickel (= Ni<sup>2+</sup>);
- (v) ionic cobalt (= Co<sup>2+</sup>);
- (vi) an amine-borane compound (= trimethylamine borane, Me<sub>3</sub>NBH<sub>3</sub>); and

(b) applying a current (= 1 A/dm<sup>2</sup>) [page 4, Example 1] to the electroplating bath whereby the alloy comprising nickel, cobalt and boron forms on the cathode (abstract).

The electroplating bath comprises about 40 g/l or more and about 100 g/l or less of ionic nickel (1-100 g/L); about 1 g/l or more and about 30 g/l or less of ionic cobalt (= 1-100 g/L); about 0.2 g/l or more and about 10 g/l or less of the amine-borane compound (= 0.5-10 g/L) [abstract].

The electroplating bath has a temperature from about 10°C to about 90°C (= 30°C) [page 4, Example 1]; and a current density of about 1 ASF or more and about 500 ASF or less is applied to the electroplating bath (= 1 A/dm<sup>2</sup>) [abstract].

The electroplating bath is provided by combining water (= aqueous), nickel sulfate (= NiSO<sub>4</sub>), cobalt sulfate (CoSO<sub>4</sub>), and an amine-borane compound (= trimethylamine borane, Me<sub>3</sub>NBH<sub>3</sub>) [abstract; and page 4, Example 1].

The nickel cobalt boron alloy comprises about 2% by weight or less of components other than nickel, cobalt and boron (= 0% by weight) [abstract].

The method of JP '848 differs from the instant invention because JP '848 does not disclose the following:

- a. Wherein the electroplating bath comprises at least one acetylenic brightener, as recited in claim 1.
- b. Wherein the acetylenic brightener is selected from the group consisting of acetylenic alcohols, acetylenic amines, acetylenic esters, acetylenic sulfonic acids and sulfonates, alkoxylated acetylenic alcohols, and acetylenic carboxylic acids, as recited in claim 3.
- c. Wherein the acetylenic brightener is selected from the group consisting of ethoxylated butynediol; 2-butyne-1,4-diol; propargyl alcohol; ethoxylated propargyl alcohol; hydroxyethyl propynyl ether; beta-hydroxypropyl, propynyl ether; gamma-propynyoxy, bis-beta-hydroxyethyl ether 2-butyn-1,4-diol; bis-beta-hydroxypropyl ether

2-butyn-1,4-diol; 1,4-di-(beta-hydroxyethoxy)-2-butyne; 1,4-di-(beta-hydroxy-gamma-chloropropoxy)-2-butyne; 1 ,4-di-(beta-gamma-epoxypopoxy)-2-butyne; 1,4-di-(beta-hydroxy-gamma-butenoxy)-2-butyne; 1,4-di-(2'-hydroxy-4'-oxa-6'-heptenoxy)-2-butyne; 2,4,6-trimethyl N-propargyl pyridinium bromide; 2-methyl-3-butyn-2-ol; 1-(beta-hydroxyethoxy)-2-propyne; and 1-(beta-hydroxypropoxy)-2-propyne, as recited in claim 23.

Like JP '848, JP '693 teaches a method of electroplating an alloy comprising nickel, cobalt and boron (abstract). JP '693 teaches adding a pyridinium salt brightener (abstract; and claim 1) to reduce the decomposition of the electroplating bath (page 2, [0015]).

Like JP '693, Passal teaches pyridinium salt brighteners (col. 3, lines 8-9). Passal adds effective amounts of at least one member selected from the group of cooperating additives consisting of:

- (a) a primary brightener;
- (b) a secondary brightener;
- (c) a second auxiliary brightener, and
- (d) an anti-pitting agent (col. 2, lines 41-47)

to typical nickel-containing, cobalt-containing and nickel-cobalt-containing bath compositions (col. 6, lines 30-38).

Examples of a primary brightener are 2,4,6-trimethyl N-propargyl pyridinium bromide, 2-butyne-1,4-diolpropargyl alcohol and 2-methyl-3-butyn-2-ol (col. 3, lines 3-

31).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electroplating bath described by JP '848 with wherein the electroplating bath comprises at least one acetylenic brightener because adding a pyridinium salt brightener would have reduced the decomposition of the electroplating bath as taught by JP '693 (page 2, [0015]), and substituting the pyridinium salt brightener with an acetylenic brightener would have been functionally equivalent as taught by Passal (col. 3, lines 3-23).

d. Wherein the electroplating bath further comprises at least one sulfur containing brightener selected from the group consisting of sulfinic acids, sulfonic acids, aromatic sulfonates, aromatic sulfinates, sulfonamides, sulfonimides, sulfimides, and sulfo-betaines, as recited in claim 2.

Passal teaches that examples of a secondary brightener are aromatic sulfonates, sulfoamides, sulfonimides and sulfinates (col. 3, lines 32-41).

Passal teaches that such plating additives compounds, which may be used singly or in suitable combinations, have one of more of the following functions:

- (1) To obtain semi-lustrous deposits or to produce substantial grain-refinement over the usual dull, matter, grainy, non-reflective deposits from additive free baths.
- (2) To act as ductilizing agents when used in combination with other

additives such as primary brighteners.

(3) To control internal stress of deposits, generally by making the stress desirably compressive.

(4) To introduce controlled sulfur contents into the electrodeposits to desirably affect chemical reactivity, potential differences in composite coating systems, etc. thereby decreasing corrosion, better protecting the basis metal from corrosion, etc. (col. 3, lines 42-56; and col. 4, lines 2-22).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electroplating bath described by JP '848 with wherein the electroplating bath further comprises at least one sulfur containing brightener selected from the group consisting of sulfinic acids, sulfonic acids, aromatic sulfonates, aromatic sulfinates, sulfonamides, sulfonimides, sulfimides, and sulfo-betaines because such plating additive compounds used in suitable combinations would have had one or more of the above functions (1) to (4) as taught by Passal (col. 3, lines 42-56).

e. Wherein the electroplating bath comprises from about 0.001% to about 5% by weight of at least one acetylenic brightener, as recited in claim 4.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electroplating bath described by JP '848 with wherein the electroplating bath comprises from about 0.001% to about 5% by weight of

at least one acetylenic brightener because Passal teaches that about 0.005-0.2 g/l (= 0.0005% to 0.02% by weight) of the primary brightener would have been effective amounts (col. 6, lines 30-38).

f. Wherein the electroplating bath has a pH from about 2 to about 6, as recited in claim 5.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electroplating bath described by JP '848 with wherein the electroplating bath has a pH from about 2 to about 6 because JP '693 teaches a electroplating bath pH of 3-10 (page 2, [0009]; and page 3, Table).

g. Wherein the anode comprises at least one of nickel, cobalt, boron, iridium oxide, platinum, titanium, graphite, carbon and platinum-titanium, as recited in claim 7.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method described by JP '848 with wherein the anode comprises at least one of nickel, cobalt, boron, iridium oxide, platinum, titanium, graphite, carbon and platinum-titanium because Passal teaches using an anode comprised of nickel for electroplating a nickel-cobalt alloy (cols. 11-12, Example 8).

II. Claims 9-12, 15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 63-239848 ('848) in combination with JP 10-245693 ('693) and

**Passal** (US Patent No. 3,697,391).

JP '848, JP '693 and Passal are as applied for reasons as discussed above and incorporated herein.

The method of JP '848 differs from the instant invention because JP '848 does not disclose the following:

a. Wherein the amine-borane compound is selected from the group consisting of dimethylamine borane, t-butylamine borane, triethylamine borane, and hydrates thereof, as recited in claim 9.

JP '848 teaches trimethylamine borane ( $\text{Me}_3\text{NBH}_3$ ) [abstract].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the amine-borane compound described by JP '848 with wherein the amine-borane compound is selected from the group consisting of dimethylamine borane, t-butylamine borane, triethylamine borane, and hydrates thereof because structural relationships may provide the requisite motivation or suggestion to modify known compounds to obtain new compounds. For example, a prior art compound may suggest its homologs because homologs often have similar properties and therefore chemists of ordinary skill would ordinarily contemplate making them to try to obtain compounds with improved properties (MPEP § 2144.08(II)(A)(4)(c) and §2144.09).

b. Wherein a current density of about 10 ASF or more and about 200 ASF or

less is applied to the electroplating bath, as recited in claim 10.

JP '848 teaches 1 A/dm<sup>2</sup> (page 4, Example 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the current density described by JP '848 with wherein a current density of about 10 ASF or more and about 200 ASF or less is applied to the electroplating bath because changes in the current density are not deemed patentable modifications; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed "critical" ranges and Applicant has the burden of proving such criticality; even though Applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and MPEP § 2144.05.

Furthermore, the current density is a result-effective variable and one skilled in the art has the skill to calculate the current density that would determine the success of the desired reaction to occur (MPEP § 2141.03 and § 2144.05(II)(B)).

c. Wherein the electroplating bath further comprises at least one organic brightener selected from the group consisting of ethylenic alcohols, coumarins,

aldehydes, compounds containing a C≡N linkage and heterocyclics, as recited in claim 15.

JP '693 teaches that incorporating a heterocyclic quaternary compound into a nickel cobalt boron electroplating bath as a brightener prevents corrosion of electronic parts and prevents precipitation of metals on an insulating part when the current density is increased (abstract; page 2, [0009]; and Claim 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electroplating bath described by JP '848 with wherein the electroplating bath further comprises at least one organic brightener selected from the group consisting of ethylenic alcohols, coumarins, aldehydes, compounds containing a C≡N linkage and heterocyclics because this would have prevented corrosion of electronic parts and prevented precipitation of metals on an insulating part when the current density is increased as taught by JP '693 (abstract; page 2, [0009]; and Claim 1).

III. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 63-239848 ('848)** in combination with **JP 10-245693 ('693)** and **Passal** (US Patent No. 3,697,391) as applied to claims 9-12 and 24 above, and further in view of **SU 1,544,847 ('847)**.

JP '848, JP '693 and Passal are as applied for reasons as discussed above and incorporated herein.

The method of JP '848 differs from the instant invention because JP '848 does not disclose wherein the sulfur-containing brightener is a sulfo-betaine brightener, as recited in claim 13.

SU '847 teaches that an additive containing a N-containing heterocyclic compound increases the hardness of a nickel or nickel-cobalt alloy coating (abstract).

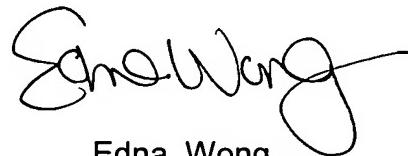
It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the sulfur-containing brightener described by Passall with wherein the sulfur-containing brightener is a sulfo-betaine brightener because an additive containing a N-containing heterocyclic compound would have increased the hardness of a nickel or nickel-cobalt alloy coating as taught by SU '847 (abstract).

The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by the Applicants. *In re Linter* 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon* 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), *cert. denied*, 500 US 904 (1991); and MPEP § 2144.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Edna Wong  
Primary Examiner  
Art Unit 1753

EW  
June 9, 2006